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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/666,224	09/18/2003	Bernhard Jakoby	10191/3108	8465
26646	7590	01/12/2005	EXAMINER	
KENYON & KENYON ONE BROADWAY NEW YORK, NY 10004			LARKIN, DANIEL SEAN	
			ART UNIT	PAPER NUMBER
			2856	

DATE MAILED: 01/12/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/666,224	JAKOBY ET AL.	
	Examiner	Art Unit	
	Daniel S. Larkin	2856	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-6 and 8-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-6 and 8-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. In order to avoid abandonment, the drawing informalities noted in the paper mailed on 8 July 2004, must now be corrected. Correction can only be effected in the manner set forth in the above noted paper.

Contrary to applicants' position on page 9 of the amendment, the examiner can find no replacement drawing sheet highlighting the changes discussed on page 9.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claim 3 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

With respect to the limitation of claim 3, the application fails to provide an enabling description as to how one infers the total base number of the oil from the volatile constituents using the membrane and the gas sensor. The application provides no discussion of what steps are undertaken to correlate the volatile concentration with a total base number. The prior art teaches contacting the oil with electrodes to measure

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volatile contents and then gives steps to determine the total base number; however, the sensor in this application does not come into contact with the oil, therefore, it is unclear as to how the total base number is determined.

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 9 and 10 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Re claims 9 and 10: Both of these claims are depended from canceled claim 7. One is unclear as to whether these claims are to be now depended from amended claim 1 or some other claim(s).

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 4, 6, and 8-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,421,588 (Janata) in view of JP 1-315219 (Kobayashi).

With respect to the limitations of claim 1, the reference to Janata ('588) disclose

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a system for determining the condition of lubricating oil in an engine, col. 1, lines 14-17, comprising an arrangement/sensor array (18) configured to determine concentrations of volatile constituents, col. 1, lines 31-35, col. 3, lines 19-28, col. 6, lines 55-61, of the oil.

The reference to Janata ('588) fails to disclose an arrangement whereby a volatile permeable membrane is utilized. The reference to Kobayashi discloses a monitor for dissolved gas in oil comprising an oil chamber (1); a gas permeable membrane (6); and a gas sensor (9) located in a gas chamber (2) for identification of dissolved gas (6) from the oil chamber (1). Modifying the chamber of Janata to include a volatile permeable membrane would have been obvious to one of ordinary skill in the art as a means of sealing the chamber to prevent potential contamination of the sensor array by oil contacting the array.

With respect to the limitation of claim 2, the reference to Janata ('588) discloses that the system is configured for use onboard a motor vehicle, col. 1, lines 58-62 and col. 2, lines 8-33.

With respect to the limitation of claim 4, the reference to Janata ('588) discloses that the sensor array (18) contains multiple sensing elements, one of which may include a semiconducting tin oxide type sensor, col. 3, lines 45-52.

With respect to the limitations of claim 6, the reference to Janata ('588) discloses that other suitable sensors may include surface acoustic wave devices, col. 7, lines 30-33.

With respect to the limitations of claim 8, the reference to Janata ('588) discloses that aromatic hydrocarbons, such as benzaldehyde, are present in the head space above the oil, and are measured by the sensor array (18), col. 6, lines 54-64.

With respect to the limitation of claim 9, the reference to Janata ('588) discloses a separate chamber for the sensory array (18) away from the oil reservoir (12); however, the reference fails to teach a membrane separating the oil reservoir. The reference to Kobayashi discloses a gas chamber (2) that is separated from the oil-containing region (1) by the membrane (2). Providing a separate gas chamber would have been obvious to one of ordinary skill in the art as means of isolating the sensor from the oil environment, thus reducing contamination of the sensor.

With respect to the limitation of claim 10, the reference to Janata fails to disclose a membrane in contact with the oil. The reference to Kobayashi discloses that the membrane (6) is contained within the oil chamber (1). Contacting the membrane with the oil contained in the oil chamber would have been obvious to one of ordinary skill in the art as a means of increasing the amount of gas gathered from the oil by reducing the distance the gas has to flow to reach the membrane.

With respect to the limitations of claim 11, the reference to Janata ('588) disclose an apparatus for determining a concentration of volatile constituents in an oil, col. 1, lines 31-35, col. 3, lines 19-28, col. 4, lines 47-50, and col. 6, lines 55-61, comprising an oil reservoir (12); a sensor array (18) comprising a semiconducting tin oxide type sensor/array (18), col. 3, lines 45-52. The reference to Janata ('588) fails to disclose an arrangement whereby a volatile permeable membrane is utilized. The reference to

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Kobayashi discloses a monitor for dissolved gas in oil comprising an oil chamber (1); a gas permeable membrane (6); and a gas sensor (9) located in a gas chamber (2) for identification of dissolved gas (6) from the oil chamber (1). Modifying the chamber of Janata to include a volatile permeable membrane would have been obvious to one of ordinary skill in the art as a means of sealing the chamber to prevent potential contamination of the sensor array by oil contacting the array.

With respect to the limitations of claim 12, the reference to Janata discloses the presence of a headspace (14) between the oil (16) in the oil reservoir (12) and the sensor (18).

8. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 6,421,588 (Janata) in view of JP 1-315219 (Kobayashi) as applied to claim 1 above, and further in view of US 5,942,676 (Potthast et al.).

With respect to the limitations of claim 5, the reference to Janata ('588) only discloses the sensor element is comprised of tin oxide. The reference to Kobayashi fails to explicitly disclose in the abstract the type of gas sensor utilized in the reference. The reference to Janata fails to disclose that the tin oxide sensor comprises other additives. The reference to Potthast et al. discloses a semiconducting metal oxide sensor for use in detecting combustible gases. The sensor utilizes a base material of stannic oxide (SnO_2). The reference further discloses that the metal oxide is doped with a precious metal additive, such as palladium (Pd), in a concentration of 0.5 to 3 mol %. Additionally, the metal oxide can also contain admixtures in the form of oxides of

bivalent elements, such as zinc (Zn) or a trivalent element, such as aluminum as oxide (Al_2O_3), in concentrations of 0.01 to 0.3 mol %. Providing additives to the metal oxide semiconductor would have been obvious to one of ordinary skill in the art as a means of making a more efficient sensor given that the addition of precious metal is used to influence the speed of the sensor, and the addition of the metal oxide admixture is used to limit crystallite growth following conclusion of the production process, which in turn improves the resistance to aging of the sensors.

Response to Arguments

9. Applicants' arguments filed 05 November 2004 have been fully considered but they are not persuasive.

In response to applicants' argument that there is no suggestion to combine the references, page 11, lines 10-29, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, both references, Janata and Kobayashi, are interested in determining the dissolved gas content in an oil, such that a headspace is created to remove vapor/gas content from the liquid oil and pass the gas to a sensor for determination of the chemical components of the vapor or the dissolved gas content of the oil. Creation of this headspace reduces

the potential of the gas sensor to be fouled by oil contamination; however, the entire risk is not eliminated. Kobayashi provides a device that eliminates the risk of oil fouling by utilizing a gas permeable membrane to separate the oil from the gas sensor, thus allowing only dissolved gases to contact the sensor. Eliminating potential oil contact with the sensor eliminates the sensor fouling, which in turn allows the sensor greater accuracy and longevity.

In response to applicants' argument that neither reference suggests contamination of a sensor as a problem in sensors of this type, page 11, lines 22-26, the examiner agrees with applicants; however, the examiner argues that the motivation used by the examiner does not have to be expressly recited in the references. Although, the reference to Kobayashi fails to explicitly recite the purpose of the membrane, other than to separate gas from the oil, will also eliminate fouling of the sensor by the oil. One of ordinary skill in the art would clearly recognize that oil fouling of a sensor would decrease the accuracy and longevity of the sensor; therefore, the examiner argues that this is a perfectly legitimate reason why one of ordinary skill in the art would be motivated to combine the teachings of a gas permeable and oil impermeable membrane with the invention of Janata.

In response to applicants' argument that the applied references teach away from the asserted combination, page 11, lines 30 and 31 through page 12, lines 1-17, the examiner respectfully disagrees. It is applicants' assertion that the Janata reference teaches away from the use of a membrane because a headspace is used as a means of separating the dissolved gases/vapors from the oil. It is the examiner's opinion that

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applicants are using the phrase "teaches away" improperly. The examiner can find no teaching in Janata whereby a membrane is explicitly discussed as a structure that should not be used or cannot be used because the teachings of Janata will be altered/destroyed by the inclusion of a membrane. Kobayashi discloses a gas permeable membrane and Janata discloses using a headspace; however, neither reference discloses that the structure used in the other reference should not or cannot be used.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

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11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Daniel S. Larkin whose telephone number is 571-272-2198. The examiner can normally be reached on 8:00 AM - 5:00 PM Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams can be reached on 571-272-2208. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Daniel Larkin
AU 2856
31 December 2004



DANIEL S. LARKIN
PRIMARY EXAMINER